

Aviation News

McGraw-Hill Publishing Company, Inc.

DECEMBER 5, 1943

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New gun is largest known weapon ever mounted on bomber; given first test against Japs.....Page 10



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U. S. Leads World in Helicopters

Grover Loening, NACA Chairman, regrets exaggerated claims, sees technical difficulties ahead...Page 13



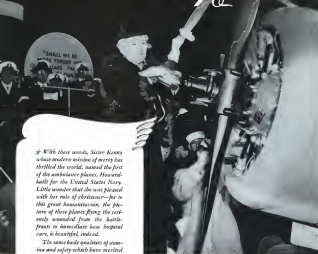
Chamber Group Asks Termination Law

Lucien W. Shaw cites perilous financial position of aircraft plants as result of great overexpansion during the war.....Page 19



Heads United Aircraft: Forty-year-old H. Mansfield Horner, moved up from general manager of Pratt & Whitney Aircraft to presidency of United Aircraft Corporation in realignment of top executive officers.

I CHRISTEN THEE "HOWARD NIGHTINGALE"



★ With these words, Stacy Kenney whose modern mission of mercy has thrilled the world, named the first of the ambulatory planes, Howard-built for the United States Navy. Little wonder that she was pleased with her role of christener—for is this great humanitarianism, the picture of these planes flying the seriously wounded from the battlefronts to immediate base hospital care, is beautiful, indeed.

The same basic qualities of sturdiness and safety which have merited Howard's aviation assignments, will be equally evident in Howard planes when they again serve a peacetime America.

★ ★ ★
* Howard Nightingale ambulator planes (G4H-2) and advanced trainer planes (G4H-1) are built for the United States Navy. For the United States Army, primary trainer planes (PT-21)

Howard AIRCRAFT CORPORATION
CHICAGO AND ST. CHARLES • ILLINOIS

THE AVIATION NEWS

Washington Observer

SECRETS OUT—Speculation was rife in the capital the past week as the annual number of bootloose closely held military secrets which have come to light through official sources, and further speculation on the possible existence of these disclosures in connection with the perennial guessing content on the invasion of Europe. The fact that "Mitscher" has been now about 75 mm. cannon first seen in a brief dispatch from Australia and was quickly supplemented and suggested by the War Department. Finally revealed was the new water injection device which adds power to warplane engines. Then there was the slight operation of the "Catalina," with assistance of the destruction they have wrought. There were hints from the Navy that we have secret weapons which pale any conceived by our enemies, and the Chief of Ordnance referred to other mysterious arms.

ATTACKS ON BERLIN—In aviation circles and out, the speculation that centered around the disclosure of our new weapons shared discussion with the bombings of Berlin, in which air power apparently is being brought to bear on the enemy into submission. The definite results are eagerly awaited by all proponents of air power. British and American air officers assure all that the terrible visitations on the center of Nazi-land will continue in fury. Some observers see in the attacks a chance for air power to bring the enemy to a point of surrender. Others held that air power alone will not do the job. Whatever the answer, there is a definite feeling here of big things in the offing.

THE "FLYING FORTRESS" NAME—"Flying Fortress" has always seemed a particularly appropriate name for Boeing's great bomber, but a different viewpoint has been expressed by Air Marshal Sir William Walsh, head of the RAF delegation in the United States. Sir William says he often thinks "Flying Fortress" is a "bad name," and explains that it gives the impression of something defensive, while in fact it is highly offensive. He suggests Flying Battleships, perhaps, as a more apt name "because they are battleships in the truest sense—they fight." Sir William may have something there, but Flying Fortress to most people suggests anything but defensive action and the "Flying Fortress" will stand long in aviation history for its feat, regardless of its name.

DAY OF INFAMY—Ward went out from the White House to the various war agencies to tell pedal any ideas they may have had on Pearl

Harbor anniversary statements or releases and that any observance of Dec. 7 should be as solemn as a "day of infamy" calls for. Neither the Office of War Information nor the War Production Board, for example, had any official statement, nor was there anything special from either the Army or Navy.

TWO YEARS AFTER—Even the most sober reflection of the attack on Pearl Harbor cannot obscure the magnificent job done by the aircraft industry since that day, a task which some of the most conservative members of the industry privately thought would be impossible when the President called for 50,000 airplanes and then for airplanes at the rate of 100,000 a year from an industry which was hardly out of wadding clothes. Aircraft unit production for November was close to 1,000. That is the aircraft industry's answer.

THE MITCHELL'S CANNON—Disclosure of the 35-35's terrible new firepower with the installation of a 15 mm. cannon in a redesigned



Prototype for new 15 mm. airplane cannon.

now reveals another triumph for aircraft engineers and designers who have long wrestled with problems attendant upon putting bigger and bigger guns and more firepower onto warplanes. The Observer foretold this greatly in-



How George Best Uses The General Motors Corp.

M-H Controls speed aircraft engine testing

SPECIAL automatic remote control devices developed by Minneapolis-Honeywell engineers are speeding the testing of aircraft engines in the nation's newest and largest aircraft manufacturing plants. These new control devices not only conserve manpower, but make possible positive, accurate findings under all kinds of flying conditions which are simulated in the test cells. Automatic recording devices by Brown Instrument Co., a Minneapolis-Honeywell

subsidiary, take down operational data of each engine so that complete performance record is available. This new development by Minneapolis-Honeywell engineers is but one of the many M-H contributions to the war effort. . . . If your problem deals with automatic control, M-H engineers can help you. Minneapolis-Honeywell Regulator Co., 1547 4th Ave. S., Minneapolis 5, Minn. in Canada, Toronto. In Europe, London, England, and Stockholm, Sweden.

BUY MORE WAR BONDS!

INSTRUMENTS BY **BROWN** AND CONTROLS BY
MINNEAPOLIS-HONEYWELL
FOR THE INDUSTRIES

PROVIDES AUTOMATIC TESTING FOR:

- 1 Oil temperature and flow control.
- 2 Fuel temperature and flow control.
- 3 Coolant temperature and flow control.
- 4 Carburetor air flow and temperature control.
- 5 Air cooled engine temperature control.
- 6 Automatic safety shut down in alarm control.

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DECEMBER 8, 1945

Aviation Distributors Urge Plan To Dispose of War Surpluses

Propose 7-man commission appointed by President for task to "take government out of business," in St. Louis convention

By ALEXANDER MCGUIRE

Proposal to handle surplus war materials through a seven-man federal commission to be appointed by the President was outlined to 300 members of the Aviation Distributors and Manufacturers Assn. in a convention at St. Louis last week, by H. P. Ladd, president of the National Screw and Manufacturing Co., Cleveland.

Ladd, a member of a U.S. Chamber of Commerce committee on surplus products for postwar distribution, said the plan was being recommended by the committee to Congress, and that interest in it already had been shown by Senator George and other Senators.

Worries of Need of Program—Unless the commission set some other means of supervising distribution of surplus is established, Ladd warned, "We can take all our post-war plans, everything that is being considered here at this convention, and throw it into the window."

He estimated that surplus supplies would total between 20 and 300 billion dollars, exclusive of actual war materials such as guns, ammunition and materials not readily usable for peacetime needs. **Innovation**—Under the plan, committees would be appointed subject to Senate approval, and each would have at least five years' executive experience in industry or commerce. The commission would be allowed freedom of judgment in disposing of surplus materials, with limits of general policies prescribed by legislation, and would be advised by committees from various industries.

The commission also would be empowered to require uniform periodical inventories by all government agencies, periodic reports on surpluses on hand inspection of stocks periodically, and to establish price and time of disposal with

power to sell the materials and instruct the appropriate government agency to deliver the material sold to the purchaser.

Headquarters—"The plan, in brief, would take the government out of business," Ladd said. "It would mean discontinuance of surplus materials rather than dissipation legislation."

He predicted the plan would en-

able the government to recover over a long time period, perhaps as long as 20 years, as much as 60 percent of money invested in surplus supplies, compared with approximately five percent recovered by sale of war materials after the first world conflict.

Provisions should be made jointly by the commission and by the armed forces for maintaining sufficient reserve stocks of the materials and of war plants, as a reserve against possible future war needs. **Electors**—The association voted to re-elect its present officers, including Ray Sawyer, Chicago, president; W. F. Scott, Jr., Robertson, Mo., vice-president; George A. Fenwick, Philadelphia; Stanley S. Tomason and M. E. Glavin, Philadelphia, assistant secretaries, and to elect C. R. Ranch, New York, to a vice-presidency.

Power Booster

The secret of added power, which has been added to present variable engines, finally has been disclosed officially with Army approval, as a waste of power during which makes possible added bursts of speed in planes to give position on an enemy or to take essential evasive action herebefore not possible.

A year ago Pratt and Whitney engineers began their study of the application of water injection to double Wasp engines and pending official acceptance they produced 1,000 conversion units.

The Eighth Air Force fighter command first used the new device in combat last July with highly successful results. The point, at the pressure of a switch, can add considerably more power to its engine.

Three practical advantages of the new device, as outlined by Pratt and Whitney engineers, are the cooling effect of the vaporization in the cylinder is greater with water than fuel; the susceptibility to detonation, limiting the power that can be taken from a cylinder is lessened with the presence of water in the cylinder; and it produced more power because it employs a leaner mixture.

Four directors re-elected were G. B. Vandusen, Minneapolis; L. G. Mason, Haverhill, Ga.; H. V. Twidler, Pittsburgh, and A. W. Whistler, Portland, Ore. New directors named included: R. B. Kevoy, Dallas; T. G. Tyrone, Philadelphia; George Wilson, Chicago; W. Lavin Case, Akron, LaSalle, and Richard Roeschberger, Little Rock.

Coast Guard, Navy Test Helicopters

Both branches work together in development for patrol work

The new chief of the Coast Guard aviation division, Cmdr. S. C. Lumb, has expressed considerable interest in the possibilities of helicopters for coastal patrol and offshore peace functions of the organization.

The Coast Guard, which is a part of the Navy in wartime, has shown more enthusiasm for helicopters than the Navy, but both branches are working together in their development.

Replaced Lossy—Comdr. Linholm replaced Comdr. Francis A. Lossy. Linholm was graduated from the Naval Air School at Pensacola in 1935 and has served as commanding officer of the Coast Guard station at Biloxi, Miss., and in San Diego.

Horner Succeeds Wilson as New United Aircraft Corp. President

Former head and Raycroft Wahl, former senior vice president, named vice chairman; other positions announced

The promotion of several principal officers of United Aircraft Corp. which places in the presidency, 46-year-old H. Monro Wilson, has been announced by Frederick H. Bentschler, chairman of the board.



Raycroft Wahl H. Monro Wilson

Raycroft E. Wahl is relinquishing the presidency in order to devote his entire time to his duties as vice chairman of the corporation and Raycroft Wahl, formerly senior vice president, has been named a vice chairman. William P. Green,



William P. Green Joseph P. McCarthy

formerly assistant general manager of the Pratt & Whitney Aircraft Division, has been promoted to acting general manager. Harner was previously vice president in charge of manufacturing and general manager of Pratt & Whitney.



C. E. McCarthy Edwin Green

Reassignments.—In connection with the changes, Bentschler issued a statement in which he emphasized the necessity for looking to future operations. Bentschler said "It is believed this reassignment of our

principal officers will tend to strengthen the general executive department and also operations. It continues United's stand policy of advancing personnel within the organization. It also will serve to bring along our younger executives to positions of greater responsibility and at the same time will provide our mature senior personnel with the opportunity of devoting their efforts to the general business affairs of the corporation, particularly in the correlation of research and development programs of all United's divisions, to ensure timely and effective planning and anticipating future requirements."

Horner Veteran Employee.—Horner, the newly elected president, is the youngest of the United to hold that office. He is a veteran with Pratt & Whitney, having joined the company in 1926, one year after it was founded. He was named general manager in June, 1946.

Green, who becomes acting general manager of Pratt & Whitney, is 36 years old and has been with the company nearly 17 years. He was named assistant sales manager in 1939 and in 1942 became assistant general manager.

Joseph P. McCarthy continues as controller and Sidney A. Stewart and Charles J. McCarthy as vice-presidents.

History.—Bentschler, with two sons, founded Pratt & Whitney Aircraft in 1935. In October, 1938, he was the moving spirit in the organization of United Aircraft and Transport Corp., which included Pratt & Whitney and several other manufacturing and transport divisions. In 1944, this became United Aircraft Corp., devoting its time and facilities mainly to research, development and manufacture of aircraft engines and propellers.

Wilson, after a distinguished naval career following his graduation from Annapolis, joined United Aircraft in 1930 as president of Hamilton Standard Propellers Corp., then a subsidiary of United Aircraft.

and Transport. Later he became president of Sikorsky Aircraft Corp. and of the Chance Vought Corp., both United subsidiaries. In 1937 he was elected senior vice-president of United and on the death of Donald L. Brown in 1945, he became president.

Wahl, 16 years an officer and flyer in the U. S. Army, joined United Aircraft in 1939 as vice-president of Hamilton Standard Propellers. He became vice-president of United in 1940 and in November, 1943, was named senior vice-president.

New Chamber Board Is Topflight Group

Determination of the aircraft industry to have a strong national trade association which speaks with authority is seen in the strong Board of Governors recently submitted to the annual meeting of the Aeronautical Chamber of Commerce in Washington last week. All 15 members are persons.

As chairman of the Board of Governors, the nominating committee presented the name of Donald Douglas, head of Douglas Aircraft, as president. Carlisle Ward, Jr., of Fairchild, and as vice-presidents, Lawrence Bell, of Bell Aircraft, and Lamont T. Coker, of Northrup.

Conference Plans.—Plans were discussed for the holding of frequent meetings, alternating between the East and West Coast in order to give board members full access to views and opinions of all members.

Details of plans for the meetings were expected to take several weeks to complete and the new officers will not take over until this program has been worked out.

Membership.—The new board of members, having lost much liability to serve, will include: Donald Douglas, Douglas Aircraft; J. H. Kaseberger, North American Aviation; Robert E. Gross, Lockheed Aircraft; Harry Eastman, Consolidated-Vultee; P. G. Johnson, Boeing; T. Claude Ryan, Ryan Aeronautical; Guy Vanaman, Curtiss-Wright; J. Carlton Ward, Jr., Fairchild; Eugene E. Wilson, United Aircraft; Victor Eastman, Avco Corp.; Alfred Marchev, Republic; Ernest B. Breech, Bendix Aviation; Thomas A. Morgan, Sperry Corp.; Glenn L. Martin, Glenn L. Martin Co.; and C. J. Braker, West.

The main membership meetings were provided by a session of the old Board of Governors to act on proposed by-law changes necessary

to chamber reorganization plans. **New Changes.**—Under discussion at the membership meeting were proposals to change the name of the chamber, to restrict membership to those actually engaged in aircraft and closely related manufacturing, and other details of the reorganization program.

With the selection of a directing executive head of the chamber, it was expected that he would be named president.

Expanded Schedules Strain Labor Supply

Air industry to need 100,000 more men in next six weeks, WMC officials estimate.

War Manpower Commission officials estimate the aircraft industry will need between 100,000 and 120,000 additional workers in the next six weeks to meet accelerated production schedules. Despite a record-breaking output of planes in November, centered usually at rates less than 5,000.

A paradoxical situation has developed in manpower, with sharp cutbacks in some areas, while in others new schedules call for additional men, which will strain manpower resources.

Cutbacks and Expansion.—About 700,000 workers may be added to war industries within the next few weeks, WMC officials estimated, at the same time figuring that 150,000 workers will lose their present jobs, due to production cutbacks and program changes.



TRUCK FLEET WINDBREAKER:

Five paraders here came out of the Alaskan-Alutian area illustrating the notoriously severe weather conditions as does this U. S. Coast Guard photo. The force

Lea Bill Stands

Reports that House leadership favors floor consideration of the Lea Bill (H. R. 3489) to amend the Civil Administration Act gave added hope last week to those who want it reported out by the House Rules Committee.

The Committee has held one hearing on the measure, but sponsors of a majority bill (H. R. 3491) have not had a chance to testify. With many members away from Washington, it was doubtful that Chairman Sabath (D. Ill.) would call another committee meeting on the Lea measure before next week. Then the hearings may extend several days.

Lea supporters were still confident, however, that the committee will grant a rule, that the bill will be debated, and that it will pass the House by a comfortable margin.

It was disclosed that 70,000 men are being released from the armed services every month because of medical discharges, over-age and other reasons. Not all are equipped to enter war industry, although many are listed by aircraft and other war industries.

Reclassification.—Despite the number dropped from jobs because of production cutbacks, they frequently fail to relieve the shortage in any great extent, because cutbacks frequently take place in areas too far removed from the tight labor area to make transportation practical.

There have been reclassifications

among critical and less critical labor areas and the number in labor is most critical, has dropped to 69 from 177 during the past month. This was due to changes in production, however, rather than to an easing of over-all manpower requirements.

Wilson Takes Over WPT Operations Post

Executive vice-chairman succeeds H. G. Bentschler

A new "bunching" move in the War Production Board under which Executive Vice-Chairman Charles E. Wilson takes over the duties of the vice-chairman for operations is expected to have little if any effect on aircraft manufacturing.

At a staff meeting of division directors, Wilson agreed to take over the additional job temporarily. It became vacant with the resignation of H. G. Bentschler, who is returning to private industry. The office is charged with scheduling raw materials and component parts. However, aircraft components are scheduled under a separate order and Wilson's functions in the office so far as aircraft is concerned are related only through allocation of basic raw materials.

One of the purposes of the meeting was said to have been to provide numerous WPT executives to review with the board, there having been indications of a number of resignations of men important not only to the continuance of war production, but to related reverse-engineering problems which are beginning to arise.



of winds during a squall at Dutch Harbor, Alaska, was so great that a fleet of Navy trucks was called out to serve as a windbreak for the Catalina plane.

75 mm. Cannon Gives "Mitchell" Formidable Firing Power

Army permits announcement of new gun, largest known weapon ever mounted on a plane; given first test against Japs.

The test of combat apt and ground, North American Aviation's new B-25 Mitchell is now disclosed as mounting a 75 mm. cannon in its newly designed nose, together with two 36 calibre machine guns, giving it a terrific firepower not possessed by any other airplane in its class.

The 75 mm. cannon is the largest known weapon ever mounted in an airplane and, although a number of aircraft manufacturers were invited by the War Department to adapt airplanes to carry such gun installations, the B-25 is the first to be made and to see action. The first went into action last July.

Supplies Born Load — The largest weapon installed in an airplane prior to this is believed to be

the 48 mm. cannon used by the British to arm the Mustang, Spitfire and Hurricane. Bell's Airacobra mounts a 37 mm. cannon in the nose of its single engine. The new installation has not affected the B-25's bomb bay capacity or its speed.

First word of the airborne 75 mm. cannon came in a brief dispatch cleared by censorship in Australia. Details of the new armament, worked out by North American engineers in cooperation with Ordnance Department officers, were then disclosed by North American with permission of the War Department.

Revel Problem Solved — Company engineers say that, while it might seem that a B-25 would literally

"hang" in midair from the effort of a shell being fired from its nose, actually the recoil fell in the airplane in almost negligible. The shells fired from the cannon are 34 inches long and weigh 38 pounds. The projectile proper weighs 15 pounds.

The recoil for the discharge is taken by a secret-type, hydro-spring control device. In tests, three shells were fired in 10 seconds.

New Structure Extended — In making changes in the bomber to accommodate the cannon installation, a new and shorter nose structure was designed to replace the glass-enclosed bombardier's compartment. In addition, it was necessary to relocate the controls from the forward compartment to the pilot's compartment, reverse the navigator's compartment, and add armor plate for protection against front-of-air fire.

Engineers, in making their tests, took an entire section of a B-25 forward of the wings and installed the cannon, then moved the section to a firing range.

2,000 Lbs. Added — Production of

the cannon-bearing plane started at North American's California division three weeks later. It required 12,351 engineering man-hours and 380 new drawings to complete the redesigning job. In addition to the work in California, where all B-25's are custom-equipped, the North American modification center at Kansas City also adds the 75 mm. gun to many B-25's.

The cannon and redesign added about 2,000 pounds to the airplane's gross or loaded weight, armament installation and ammunition contributing.

The new airplane cannon, built on a recent assembly, is installed in what was formerly a passageway beneath the left side of the pilot's compartment. The muzzle projects forward through a blast tube in the lower nose section and the breech extends aft to the left forward side of the navigator's compartment.

Effective Against Tanks — Crew of the B-25 consists of pilot, co-pilot, navigator, radio operator and upper turret operator.

Although the plane retains its effectiveness in bombing, troop striding, carrying torpedoes, and in reconnaissance, its principal use of the cannon is expected to be against shipping, gun emplacements, landing barges, tanks and enemy planes. The newly equipped plane has been credited with aiding in the sinking of a Japanese destroyer, pulverizing



TESTING A TURRET AT LOW TEMPERATURE:

Sgt. Jensen inside the armament laboratory's cold chamber at Wright Field, Dayton, checks the operation of a Consolidated Liberator B-24 tail turret. He wears arctic mask, seated in "high fighter" in the pressurized chamber, which can simulate altitudes up to 50,000 feet.

other vessels and destroying important military targets in its action against the Japs in the South Pacific and probably other war zones.

By that order, NWLB overruled a decision of the Regional Board, which in effect reviewed the award on its merits.

In an opinion giving the reasons for NWLB's unanimous decision, Dr. George W. Taylor, vice-chairman, said the company had claimed, when the last time study was made, that employees had been "baiting back on their production and metering their jobs." They further claimed that the workers "did not give to the time study men their best effort and through bribery were withholding production."

Cross Earnings Increase — Dr. Taylor said further, "It is reported by management that earnings composed from an average of \$1.40 to \$1.80 per hour, and some employees were making as high as \$2.50 an hour." The union, on the other hand, maintains that the relatively high earnings are the result of a great effort expended by the employees of much more than an average skill and ability.

NWLB adopted a new standard procedure in administering the voluntary maintenance of membership provision. On the basis of its experience during the past year, the new procedure is designed to give maximum protection to the worker and to guarantee business interference with operations of management.

FEDERAL DIGEST

NWLB Approves Ruling To Permit Firm To Revise Piecework Rates

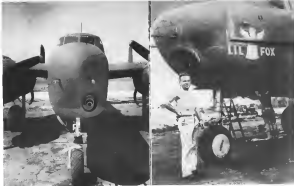
Decision affecting Republic Aircraft Products Division of Aviation Corp. involves possible wage cut; summary of week's activities in U. S. business and war agencies.

In one of the first cases to come before the National War Labor Board involving a possible decrease in wages, NWLB unanimously approved an arbitration award allowing officials of Republic Aircraft Products division of Aviation Corp. to revise certain piecework rates.

The argument between the company and UAW-CIO dates back to an agreement signed March 1, 1941, and continues through various agreements and stipulations by the United States and an arbitration award made last March. NWLB emphasized its policy of never reviewing an arbitration award on its merits,

but, only to determine whether wage adjustments contained in the award are compatible with the wage stabilization program.

Awards Held Binding — In its order, the Board ruled that the arbitrator's award, which allows the company to place into effect changes in piece rates where earning curves showed such relatively high earnings as to indicate a need for a change, was final and binding. To advise the company on what piece rate reductions will be compatible with wage stabilization, NWLB will appoint a special representative to assist in elaboration of the award.



NORTH AMERICAN UNVEILS AIR-BORNE 75 MM. CANNON:

Largest known weapon installed in an airplane is the 75 mm. cannon given in the new all-metal nose section of North American B-25 Mitchell bombers, together with two 36 calibre machine guns. First to go into action in the South Pacific was named "Lil' Fox" for Jack Fox (shown above), North American's senior

field representative at that theater of war. In installing the cannon in the B-25, the AAP has virtually lifted criticism into the air. Also that the cannon weighs 2,000 lbs. Photo on left shows head-on view of this devastating nose firepower. Shells fired from the cannon are 34 inches long and weigh 38 pounds.

while continuing the assurance of security for a responsible union.

Procedure consists of a simple explanation of maintenance of membership provision which may be posted in plants and which defines the rights of each employer, without penalty, to make a free choice as to membership in a union, a revised form of union security order, clarifying procedural details, a procedure for administering the maintenance of membership provision designed to protect against unwarranted discharges. The new procedure became effective Dec. 1.

Chairman of the Board stated as to whether a Christmas bonus may be considered an integral part of the wage or salary structure will be strongly on NLRB decisions in question over this question, the Board decided in a formal opinion. Before this question can be answered, other preliminary questions are posed, answers to which will indicate whether by repeated violations of action the employer has established a custom with respect to the bonus and, if it is found that such a custom has developed, whether a presumption exists that the practice should have been continued.

Roger L. Warren, assistant wage stabilization director of NLRB, has been appointed chairman of the Seventh National WLB with headquarters in New York City. Warren, as a public member of the Wage Adjustment Board and as acting director of the National Board in Charge of Industry Commissions and Panels Before Congress, was in England in 1953, he was an economist for the Halston-Pearce Co. for seven years.

National Labor Relations Board has published for production, maintenance and repair employees at the Sherman Way, Lancaster and North Highland Avenue plants of Bendix Aviation, North Hollywood, UAW-CIO. For the majority employees at Culver City and St. Andrews plants of Hughes Aircraft Co., Culver City, Calif., the National Union, United Aircraft Workers of America, was certified International Association of Machinists was certified for employees in the line and left (template lay-out) department, Cartman-Wright Corp., airplane division, Los Angeles, in an amended decision of NLRB.

Auto Property Custodians, Leo T. Caspary, issued an order requiring all persons claiming any interest in automobiles, commercial trucks or trucks now or formerly owned by companies or individuals of foreign countries, to report their interest,



Lee Renamed

Jack Lee was nominated by the White House last Thursday for reappointment as a member of the Civil Aeronautics Board for a full six-year term ending Dec. 31, 1961. Lee's previous appointment in Capital Hill is expired.

including any agreement or terms of ownership, on Form APC-301 by Feb. 1, 1964. A designated foreign national, in this instance, is a resident of any country other than the Americas, Republics, the British Commonwealth of Nations, and the USSR, and includes any person on the Prohibited List of Certain North Atlantic countries and supplemented. The purpose of the order is to locate and describe whatever interests of this type are held in the U. S. and to obtain information which will aid in the administration of those works taken over by the Custodians, according to Crowley.

Awards adding up to more than \$4,600,000 were announced by the Chief of Engineers, War Department, for construction at army and municipal airfields. Largest contract, \$397,894, was for the construction of additional buildings at Chatham Field, Savannah, Ga.



KLM CHIEF:

Wendell Mendenhall (left), managing director of the KLM Royal Dutch Air Lines, recently told reporters "a few thousand planes of the Allied Nations" could preserve peace in the postwar world. Interviewed him at La Guardia Field in Barry Goldwater, veteran reporter who covers Pan American's Croyer program and groups for the New York Herald Tribune.

For the same purpose, \$750,000 was allotted to Fairfield-Swan Airfield, near Fairfield, Calif., and for clearing, excavating and grubbing, \$137,500 was awarded a contractor at Alameda Army Airfield, Alameda, Calif. Other contracts covered such work as installation of night lighting, construction of hangars, taxiways and temporary frame buildings.

NLRB announced resignation of its general counsel Robert B. Watts, effective Jan. 1, 1966. Watts has been with the board since its inception and served with the predecessor board as chief assistant U. S. attorney for the southern district of New York and as special representative of the Attorney General to perform certain legal services abroad. Watts will join the New York firm of Pratt, Hale and Connor. He is succeeded by Alvin J. Rockefeller, who returns to the board after a three-year absence. He has recently been attacked in the editorial pages of the press for his position of supreme court litigator. When previously with NLRB, Rockefeller served as trial examiner and later as senior attorney in the litigation section.

Electric was ordered at Bendix Aviation Corp., Philadelphia, within 30 days of Nov. 24. Production, maintenance, inspection, test-up, powerhouse, stockroom, bed room, and other related material receiving, shipping, salvage, stock-chasing, made expediting and dispatch employees will vote for international union of machinists, AFL-CIO, the UAW-CIO, the United Aircraft Workers Council, Inc.; for American Aircraft Workers, Local 134, of the United Electrical, Radio and Machine Workers of America, CIO, or for none.

Productivity and maintenance employees of Minneapolis-St. Paul Register Co., Aero Division, Chicago, including plant clerical employees and set-up men, will add an election within 28 days of Nov. 24. They will vote for representation by International Union of Machinists, AFL, for United Electrical Radio and Machine Workers of America, CIO, or for neither.

WFL has approved election of CAA airport at La Crosse, Wis., to cost \$664,000.

New Venezuelan Line

Formation of a new all-cargo air service to operate in Venezuela has been announced by Pan American Airways, which says it will have a number of pilots, trained and maintenance technical knowledge.

The line will be known as Aerovias Venezolanas, S. A., (Avenas) and carry air cargo on charter between points in the interior as far south as Santa Elena in the diamond field.

Tri-Motors to be Used—Three Ford tri-motor planes are to be used and Washington sources say one is understood to have been delivered, while the others are expected before the end of the year. Reports from the same governmental source are that two lines are being operated at the start, from Managua to Ciudad Bolivar via Caracas and Maracaibo, and from Managua to Maracaibo via Barranquilla.

Personal Plane Men See Big Job Ahead

Gearing means that success depends on aircraft's ability, not salesmanship.

Leaders of the personal aircraft industry, who have a sales job confronting them, dismised the view of those who believe their postwar problems are due to the reluctance of buyers to buy. They predict that a ready-made market will exist and that plant facilities will convert easily.

They may be partly true, but Joseph T. Gessing, Jr., chairman of the Personal Aircraft Committee of the Aeronautical Chamber of Commerce, warns that the success of personal aviation will depend on the ability of private aircraft makers to market on high pressure and not on trick selling or high pressure marketing.

Competition—Gessing, an executive of General Aircraft, believes the greatest competition personal aircraft sales organizations will face after the war will be that between aviation and other industries and he warns against taking for granted the public's eagerness to try its wings.

Dismissing the pattern of future aircraft sales before the recent meeting of the National Aviation Training Assn. in St. Louis, Gessing pointed out that aviation cannot fulfill its vast potentialities merely through the support of enthusiasts alone, but will require the personal participation of people of all classes and groups.

Selling Aviation—"To the personal aircraft manufacturers," he said, "this means selling aviation to the public—not in terms of an individual make of plane, but in terms of the helicopter's limited future" before Brooklyn Institute of Arts and Sciences. America is "notably in the



KEY CARGO MEN WITH UNITED:

United Air Lines' cargo men met recently with C. P. Goodrich (center), director of IAL's air cargo department, to discuss the problems that arise as it sometimes sells their service with shippers in various areas. With Goodrich, whose office is in Chicago, are (left to right, front row) David E. Fleischer, Seattle; Bruce H. Woods, Omaha; R. L. Stangold, Portland; J. K. Scheraga, Cleveland; Goodrich; R. C. Kowalski, Philadelphia; J. K. Hayslett, Newark; and Fred P. Duncan, San Francisco, (rear row, left to right) M. T. Bivens, Paul E. Sherkens and Glen C. Evers of Chicago, W. J. Herndon, New York; Thomas W. S. Davis, Washington, Robert E. Conley, Los Angeles, and C. H. Bennett, Oakland.

aviation may create some customer interest, but that utility must make the sale and the repeat order, it must be taught to see the value in increasing aviation efficiency.

Salesmanship—Gessing feels that sales knowledge will be more important than an instructor's rating and emphasized that the private

flier after the war must realize that he, too, has a vital stake in regulations on flying and licensing.

He added that although it is the responsibility of the manufacturer to achieve flying safety with a minimum of instrument and technical application, it is the responsibility of the man who will fly to help prevent excessive regulations.

U. S. Leads World in Helicopters But Big Problems Remain—Loening

Chairman of NACA Committee regrets exaggerated claims, sees technical difficulties restricting postwar use of skilled flying men.

Helicopter development and production is making headway, and rotary wing aircraft have a great future, but Rock Rogers' predictions are leading to conclusions that cannot be justified in the near future.

Notably in the Lead—"That is the position of General Loening," the chairman of General Loening, a member of the NACA's helicopter committee, who summarized the case of rotary wing craft in an address on the helicopter's limited future" before Brooklyn Institute of Arts and Sciences. America is "notably in the

lead" in this phase of "aircraft development."

The helicopter for many years to come will be hard to fly and "far less suitable" for the layman than the airplane. Any notion that everybody will fly helicopters right after the war is undoubtedly nonsense, he declared.

Serious Problems—Loening's are serious but will be overcome eventually. Controls will be simplified. Forward speeds will be increased, but it will be many years before 300 mph can be exceeded. Per-

formance will be answered at high altitudes. Launching on this may be met by multi-role machines. Some safety limitations now imposed may be removed which will permit heavier data loading. The obvious difference in action. Construction costs are still high.

✈️ Future Uses—When handled by professionals, the helicopter's future immediately after the war will be "wide and extensive." It may be flown by airline companies or by leased pilots employed by individuals and companies.

There will be fleets used on delivery systems for merchandise companies and on short-range airlines. Some of the firms will use them to carry loads to inaccessible places and for exploration.

✈️ Coast Guard Use—The U S Coast Guard "is almost certain" to end its use in all its life saving, fire patrol, law enforcement, and maritime work with 90 percent of its air fleet in helicopters.

"Readable" craft may possibly wind up as being poor ones on the helicopter and poor helicopters in the air. The helicopter's ability to land anywhere actually makes the readable idea less necessary.

✈️ Some Flying—Of 16 to 60 helicopter designs mentioned "ten or twelve will possibly be successful." Three or four are flying—Pittsboro, LePage Young, etc.

The WPB is creating materials to end and designating as laboratories several promising engineering groups who have good, new ideas. Army, Navy and Coast Guard, "after a little hesitancy," are placing strictly military orders and developing strictly military uses which cannot be classified. There is a preponderance with "an ambitious program of research to make sure that no stone is left unturned in exploring the fundamental of this problem."

WTS Contractors

Hear Dark Outlook

Confirmation after next spring of the national CAA-war training service program for the war effort appears unlikely. Congress approved training funds to the Army and Navy, whose own facilities are probably large enough to handle future replacements to the exclusion of privately owned schools.

✈️ Frustration—Sounding a pessimistic note at the National Aviation Training Association in St. Louis last week, H. M. Stewart, executive director of WTS and some

State License

Michigan Aeronautics Board has granted a license to Great Lakes Airways, Inc., subsidiary of the Great Lakes Airways and Lines, for operation of two biplanes, several helicopter lines in Michigan.

Mr. Alfred Burleigh, president and general manager, predicts operations would begin "within the year," and added that the War Production Board and the armed forces would be asked to release materials for construction of two helicopters of seven passenger and possibly larger capacity. Mr. Burleigh and William Stout, he said, are working on an aircraft to be used by the military, and 16 and 14-place craft of this type are being designed.

He said the contemplated routes would serve more than two-thirds of the state's population, with their main function as feeder lines for airlines operating in the state. The board's action was considered the first time issued an aerial taxi service from Detroit to 19 points in Michigan, and at least two daily round-trip flights were planned from Detroit to Pontiac, Flint, Saginaw and Bay City.

contracts will be completed in a few months, even before the end of the fiscal year.

This means that unless some action is taken soon the national system of more than 300 civilian-operated air training centers will begin disintegrating. State contracts will be unworkable and civilian business will not be forthcoming. Skilled personnel will be lost to other industries.

✈️ Nearly 10,000 Personnel—In nationwide there were 21,691 men taking flight training in WTS from Army and Navy from Jan 1 nearly 176,000 men had received training flight and ground school contractors were employing 9,676 persons including 3,332 flight instructors and 3,615 mechanics and helpers.

Since July 1, 1939, \$327,859,819 has been appropriated by Congress for pilot training through civilian agencies, including the current fiscal year total of \$18,653,000, consisting of war, navy and \$28,400,000 CAA funds.

✈️ Valuable Plant—This man has built up flight-training facilities which will be of permanent value to our peacetime civilian economy," Stewart said.

A study of flight contract rates by the WTS office resulted in an increase of \$1 per flight hour for Navy elementary training and another increase for AAF cross-country training in the flight instructor program. No changes were made in rates for the AAF flight school training course. He strongly urged a standing air reserve training corps to carry on civil training and maintain a nucleus of trained pilots.

Kansas City Session

Attracts 300

Interest is high at midwest regional air service conference.

Encouraged by the success of its recent "Short Air America" conference on local air service problems, the Kansas City Chamber of Commerce announces that a similar meeting on airports is to be held next month.

The local service meeting, which is expected to be the forerunner of sessions in other cities to discuss the same problems, was attended by more than 300.

✈️ 32 Towns Represented—Out of 133 cities and towns in the Kansas City trade area invited to the conference, 68 were represented—all on proposed air routes, of which 90 are sought by 25 operating and prospective carriers. That is an addition to the unselected routes applied for by ten other prospective carriers.

Besides the civil representatives held a dozen air lines and five prospective carriers participated in the discussion that followed the speeches at the one-day session held under the auspices of the Chamber's Aviation Department.

✈️ Trade Area Airline—The talk dealt with trade area airline service proposed services by fixed base operators, local service on trunk lines and administrative cooperation in expansion of air transportation, the last by C. Edward Lesare, chief examiner for the Civil Aeronautics Board. A demonstration of air pickup had to be cancelled because the pickup plane could not be on hand at the scheduled time.

The development of local and feeder line service was discussed by W. J. Miller, president of Mid-Continent Airlines, who urged construction of new airports for the airport program, lest "indiscriminate planning on the part of the smaller cities for the widespread 'over-construction' of airports result in a setback for both the community and the air transport industry."

Miller mentioned that "the opportunity to bring air service to the community is also an opportunity to make costly mistakes."

✈️ Fixed Base Operations—W. H. Italy, chief, secretary and manager of Consolidated Airlines, Inc., called of several speakers. He represents a group of such operators who, he said, "came to the conclusion that the service contemplated could best be rendered by the construction of all their aircraft," and hence had banded together in Consolidated Airlines to make 10,000 applications for certificates covering routes in their respective territories.

Representative of a major airline was presented by K. Lee Talbot, executive vice-president of Transcontinental & Western Air. Asst. chief, that place for emphasis on short haul traffic were being made before the week. Talbot suggested that "the first stage of development of additional air services should be the continuing extension of service to those communities located on air routes." He urged airlines to adjust their schedules into existing or proposed schedules with shift or no additional mileage and but little cost to the government.

SAE Will Discuss

Wartime Engineering

Combining discussions of methods to expedite wartime production together with possible peacetime methods of planning production to make the most of materials, machines and processes, the Society of Automotive Engineers will meet in Detroit Jan. 18-19 for a practical wartime engineering conference with postwar implications.

John A. C. Warner, general manager, and the SAE war engineering program has enabled engineers to render valuable advisory services to the military and their work a yield—of pre-products of real postwar value.

✈️ Postwar Outlook—Tentative program for the meeting calls for more than 18 discussion sessions with technical papers on aircraft, aircraft engines, diesel engines, fuels and lubricants and other subjects. Featured will be discussions of both wartime and postwar engineering uses of materials, including aluminum, magnesium, synthetic rubber, plastics and steel, with emphasis on materials which are new and upon new applications, adaptations, and uses of old materials developed through wartime material conservation and substitution.

New Thrust Meter

A new type of aircraft instrument, a "thrust meter," is now being perfected by the Propeller Division of Cessna-Wright Corp. and George W. Shady, chief engineer of the division, believes it will open the way for improvements in aircraft design and performance.

✈️ Aids Calculation—When perfected, the instrument will make possible calculation of horsepower by determining the efficiency of various types of propellers and to what horsepower engine they are best suited.

Although still in its experimental stage, the device will enable engineers to determine the two most important factors in aircraft performance—horsepower required and thrust horsepower available.

✈️ Greater Thrust—Previously, "apparent" thrust horsepower available was determined by ground tests. With the new method of flight-testing, with the thrust meter, Shady believes that a more precise knowledge of the actual behavior of the propeller will be obtained. Tests with the thrust-meter have been conducted in level flights and dives at approximately 14,000-foot pressure altitude.



DOUBLE VISION DETECTOR—A new device for testing double vision in pilot candidates applicable has been developed by Dr. J. J. Merfeldtman (left), assistant chief of the Civil Aeronautics Administration Medical Division. Four Chalmers tree lighter helped a ground glass permit 20 observations and the CAA says, discontinue occasional attempts of applicants to compress the cornea.

BRIEFING

✈️ Douglas C-64 Airmasters carried Secretary of State Cordell Hull and his party to the recent Moscow conference. American diplomats made their round-trip to the Russian capital from Washington in two Skyraiders, a total of 28,224 miles without incident.

✈️ Wright Aeronautical Corp., during the past year added 24,480 new employees and has raised 2,378 Company salaries above \$7,000 approximately yearly.

✈️ Gen. H. H. Arnold tells what the Army Air Corps are doing to insure safety of its men and what civilians can do to help in a pamphlet called "Your Boy in the AAF."

✈️ A new Venian tube is being used on gliders, trainers and some combat planes. It is molded of Laminith EC (not released) to replace the old metal pipe formerly used. The plastic will not chip, dent or rust, and has toughness and durability. Laminith is a production of the Celanese Celohol Corp. and is molded by Crumey Manufacturing Co., Chicago.

✈️ Production of "nitrocell", a one-piece combination rivet and nut developed by J. F. Goodrich Corp. originally to fasten its rubber doors to airplane wings, has now expanded to the point where the fasteners can be offered for general industrial use.

✈️ United Aircraft Corp's Hamilton Standard Propellers division has announced that a class of 45 girls has just completed an intensive engineering course at Massachusetts State College. Another class of 45 girls will take a year's course in two more are continuing at Penn. State. Two are completing graduate preparation necessary for enrollment in this course.

✈️ Plywood production at the Beton Rouge plant of The Mangel Co. increased approximately 50 percent during the first eight months of 1943 over the same 1942 period, according to Irving Bloom, vice-president in charge of Plywood and Related Materials division. The Mangel Co. is the largest hardwood plywood producer in the United States.

✈️ For the second time in two months, McDonnell Aircraft Corp. has increased its four spots. To provide additional flight hours for a new training area for experimental work, the company signed a lease for two barge buildings at Lambert-St. Louis Airport. An agreement with American Airlines as owner and the St. Louis School of Aeronautics as tenant, provides 27,300 more square feet for the company's operations.

THE AIR WAR

COMMENTARY

Long-Range Escort Fighters Give American Bombers Edge on Nazis

Large-capacity drop tanks permit pursuit planes to form protective screen all the way to target and back on long ranging missions

In the see-saw battle between offense and defense, newly developed extra long range drop tanks enable our Thunderbolts, Lightnings and Mustangs to go all the way on the big bombing missions.

One of the oldest principles of warfare is that every offensive weapon is quickly matched by a defensive weapon, which tends to make the offense too costly. In air war, the bomber is the attacking agent, carrying its loads of destruction far over the heads of defending armies and armies and striking far behind the lines at the enemy's ability to wage war and his will to resist.

Typically, the fighter or interceptor is for defense. The struggle between the bomber and the fighter goes on continuously. It has long been an air war fundamental that the angle-senter fighter, with its speed, maneuverability, fast climb and heavy fire power was seen of

the skies. The modern bomber has countered this with increased speed, higher ceiling, heavy armor plate and increased defensive fire power. Improvements in equipment are compensated by changes in tactics on both sides with a breath-taking rapidity.

"Fortresses" over the Continent.—In the summer of 1942, heavy bombers of the 8th Air Force demonstrated their ability to bomb their objectives in daylight and return to base, despite the heaviest fighter opposition the Luftwaffe could throw up against them. These were but small beginnings for the American operations, and no attempts were made at that time to ramble over the heavily defended industrial targets of Germany proper.

However, General Baker warned that if the Nazis were given time they would devise methods for stopping our heavy bomber attacks.

lines and equipment would be sacrificed, and the way prolonged.

Befine Gales in the Race.—One year later and there is every evidence that the defense has made substantial gains. Anti-aircraft is very much more effective, and up to a greater altitude. The Nazi aircraft industry brought out a formidable night fighter version of the JU-88 bomber, and, by diverting other facilities, increased their production of day fighters, armed with more deadly machine guns and cannons.

Head-on attacks with quick evasive break-away were tried, and other tactical dodges to break up the tight formations of our heavy bombers with their concentrated fire power from nearly all angles of approach. Air to air bombing, explosive shells, rocket projectiles, and flying in our own (expended) bombers and fighters—all have been used with varying measures of success and taken altogether the air battles over Europe have become nothing short of terrific.

Our Bombers Get Through.—The Pers and Liberator also have been improved, not only as bombers, with increased loads and range, but as weapons, with nose turrets, chin turrets and other well-placed guns. They are getting through to their targets, and so far masses involving such heavy relative losses as Stuttgart, the first Schweinfurt-Regensburg attack, and especially the second big Schweinfurt mission have been definitely successful.

In the over-all picture, our losses have not been out of line, although the official figures obviously do not

Rumors you can circulate!

YOU CAN SAY THAT AGAIN! BUT HAVE YOU HEARD ABOUT GENERAL AIRCRAFT'S TWO NEW SKYFARERS? IN SAFETY AND SPEED THEY WILL REVOLUTIONIZE POST-WAR PRIVATE FLYING. ONE IS ROADABLE, TOO*

THOSE ARE MARVELOUS GLIDERS GENERAL AIRCRAFT BUILDS FOR THE ARMY AIR FORCE.



★ To hear more about it, write to...

The General Aircraft Corporation, Long Island City (5) N. Y.

Licensee to the industry of mechanical engineers under patents to West and to Keesen



LONG-RANGE FIGHTERS SCORE:

Equipped with extra large drop gasoline tanks, American fighter planes are carrying the war to the Luftwaffe and taking a heavy toll of Axis craft as they accompany Allied bombers en route to distant targets. At left is a Lockheed Lightning P-38, which, designed to intercept heavy bombers, has made a spectacular success also as a dog fighter, ground strafers, tank destroyer,



night fighter, medium attack bomber and long range photographic ship. At right is the new North American P-51 Mustang fighter, equipped with a 1200 hp Packard Rolls-Royce power plant, two-speed, two-stage supercharger and Hamilton Standard hydromatic propeller, characterized by Mac Thomas Hitchcock to be the world's outstanding fighter plane in 1945.

sell the whole story. Numbers of heavily damaged planes which do manage to get back and miss the category of losses, and the number of killed and wounded crew members such planes bring back add a shaded background to the picture.

The Escort Fighter as Lost—In the North Atlantic campaign, the P-3a Lightning came into its own in a big way. Its dashlight it soon proved more than a match for the best the Luftwaffe could muster as a ground strafing plane and light bomber, it proved devastating, so that high altitude photographic spy work was available; and as an escort fighter to accompany Fortresses and Liberators, Mitchell and Marauders it turned out an answer to prayer.

A few weeks ago the Lightnings turned up in England, and took their place with the P-47 Thunderbolt in providing fighter escort for our big bomber formations.

Douder and Blimey for Name—The Thunderbolts went into action with the Eighth Air Force Fighter Command last spring, and after an indifferent start, began really throwing their weight around the upper skies over Europe by mid-summer. In the Boden raid of Sept. 17, they proved their ability to go all the way and return equipped with extra large drop tanks and the use of relays.

Shortly afterwards, Improved Lightnings came into the picture, and these gave promise of even larger

scale protection. The P-38 development is worth looking at a bit more closely for a moment. Just before Pearl Harbor, the first of the P-38s began coming off the production line, with four 30's and one 20 mm cannon in the nose and many improvements over the early models.

Engine Improvements—The next change came in the spring of 1942 with the introduction of the 1325 hp Allison P-3 engine, replacing the 1148 hp P-2. A year later another model (later designation contractual) came out with further increase of horse-power, followed by a model with even more fundamental improvement in general performance (speed, climb, range, ceiling) in the late summer of 1943. This is the model now in action from British bases as a very long range escort fighter and also as a fast, powerful fighter-bomber.

A still better model is the one just coming into large scale production at the Lockheed plant, with a high degree of specialized subcontracting and also to be produced by Consolidated-Vultee, Nashville. These new Lightnings and the Mexican-purchased blowmags when available in quantity will be able to run interference for the long range Mustangs, while the Thunderbolt, backbone of the present escort operations, will continue their excellent work for the medium range. The Luftwaffe may do as well as the Allied bombing offensive will not be stopped.

—NAVIGATOR

AWPC Cites Cost Of Excess Training

High turnover of employes costing west coast council over \$4,000,000 a month.

The critical nature of the turnover factor in the manpower problem is graphically illustrated in a statement from the Aircraft War Production Council, West Coast, that "the turnover of workers in major West Coast aircraft plants is literally dumping more than \$4,000,000 down the drain of unproductive expense every month."

T. Claude Ryan, president of the aircraft company who bears his name and head of the West Coast Council, said that is the monthly turnover cost of hiring and training new aircraft workers.

Mr. Ryan stated it is not a problem confined to aircraft plants but extends into other fields of war production and added that it can be solved by cooperation among war industries, the workers and the community.

When it is solved, Ryan emphasized, "the greatest single obstacle in the race to meet constantly rising aircraft production schedules will be removed."

Average Cost \$200 Per Man—Ryan and the average cost of hiring and training a new worker in the major aircraft plants is approximately \$244 and over the first eight months of this year the average turnover of workers was 31,373 per month.

"That represents \$4,314,884 spent every month solely for the non-productive task of hiring and training, a total cost for the year of more than \$44,350,000," Ryan remarked.

Big Reduction Possible—He contended that turnover could be entirely eliminated, but that it can be greatly reduced and that plant workers, the industry, the Council, schools and civic organizations are now engaged with this task.

Ryan pointed out that if even half the workers who quit their jobs in the first eight months of the year could have been persuaded to stick to them, a saving of more than \$17,000,000 would have resulted.

Quit For "Personal Reasons"—A recent Council study of employment terminations in member companies disclosed that 55 per cent of the workers who quit did so for "personal reasons." These reasons were difficult to analyze, but because they constitute the basis for a majority of terminations, they became a problem of prime importance.

AIRCRAFT PRODUCTION

Aero Chamber Members Ask Law on Contract Termination

Lucien Shaw of Lockheed cites perilous financial position of aircraft plants as result of over-expansion during the war.

Immediate adoption of legislation covering contract termination provisions, the all-time peak for automobile production was less than five billion dollars.

Financial Position—In that connection, however, Shaw pointed out that the most conspicuous aspect of the typical airplane manufacturer's financial position is the small margin by which current assets—cash, accounts receivable and inventories, exceed current liabilities, such as amounts owed to employees for wages, to suppliers for material and parts, and to government for taxes, reorganization refunds, advances and expenditures on war contracts.

At the end of last year, Shaw told he about 64 times 1946, an approximate 12 billion dollars. By comparison, the all-time peak for automobile production was less than five billion dollars.

Urges Strong Industry—We believe that the events of this war have amply demonstrated that America must have, for all time in the future, a strong aircraft industry," Shaw said. "This can only be possible if the industry has sufficient finances to do its job and do it well."

"There must be resources with which the search for new engineering and production techniques can be continued," he added. "As the science of aviation progresses, it be-

come of relatively slender financial resources and great over-expansion, Shaw told the committee, "the aircraft industry faces financial problems created by the war, of such magnitude that policies and provisions of individual companies cannot greatly change the situation facing the industry. Any major corrective action must be initiated by Congress."

Future Problems Studied—Shaw emphasized that the industry is deeply concerned about problems which will arise at the end of the war and added that the difficulties to be faced by the aviation industry will differ, perhaps, only in degree from those to be faced by other industries, but in certain respects, he said, the case of the aircraft industry is unparalleled in industrial history.

Shaw cited the aviation industry's 1939 output of approximately 266 million dollars and said 1943 output of the pre-war manufacturers will

be the typical aircraft company had sufficient cash and accounts receivable to pay the amounts owed to its employees, suppliers and the government and even more money, it did not have enough "back cash" assets to pay taxes and reorganization funds owed the government.

Does Difficult Situation—"This dangerous situation exists," he explained, "because these companies have been forced to put practically everything into plants and inventories, and have used for working capital their reserves for taxes due on their job in the war."

Shaw and the industry undoubtedly will experience serious difficulty in carrying payrolls and outside commitments as rapidly as contracts are terminated, but added that this serious financial situation does not prevent the companies from doing their job in the war.

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"There must be resources with which the search for new engineering and production techniques can be continued," he added. "As the science of aviation progresses, it be-



THUNDERBOLT COMES HOME:

Shrilly reconstruction saved this Republic P-47 Thunderbolt which was smacked out of attack by a group of Nazi fighters while on a bomber escort mission over France. Five 20 mm's plowed into the right wing ahead in the picture. The plane went into a spin, blew which it recovered, then into another which led the attackers to believe it was finished. Despite the heavy destruction, the pilot managed to get his plane back to England by instrument and made a crash landing at a coastal airport.



PERSONAL PLANE PROPOSERS:

Members of the Personal Aircraft Committee of the Aeronautical Chamber of Commerce met recently in Washington to discuss mutual problems and plans. Among the leaders are, left to right, John E. Hergen, manager of the Chamber's newly-created personal plane department; William A. Mera, Stinson division, Consolidated Vultee Aircraft; and Joseph T. Gaudin, trying to suppress a laugh, who is Committee Chairman. He is with General Aircraft Corp.



NAVY'S NUMERICAL STRENGTH DOUBLED:

The 27,930-ton plane carrier *Yorktown* shown above is of the same class as the new *Wasp*, whose recent completion doubled the numerical strength of the Navy's combatant fleet in less than eleven months. Aircraft carriers were one of two types of vessels receiving special emphasis this year, making the *Wasp*'s completion par-

ticularly significant. In connection with the completion of the *Wasp*, Secretary Knox disclosed that President Roosevelt has approved a new Navy aircraft goal of 32,000 instead of the previously announced 27,930 airplanes. Knox forecast last spring that in 1943 Navy combat planes will more than double this year.

... never more complicated and ever more costly. America needs an aircraft industry which can continue to lead the world in new developments and products. This can only be assured, however, if the Government recognizes the gravity of army problems with which the aircraft industry will be faced at the end of the war."

Job Training System Used to Speed Work

Typical of the aircraft industry's constant efforts to improve labor utilization is the educational program at Glenn L. Martin Co., where thousands of men and women are leaving white training and preparing for post war jobs while building bombers.

The Martin program falls into four basic divisions—pre-employment training, pre-employment training, on-the-job training and upgrading training. Each of these major divisions is broken down into many subdivisions and includes both in-plant and outside courses at nearby schools and colleges.

Integrated Training—Education at Martin starts even before the em-

ployees become engaged in productive work and continues as long as he remains with the company. Each step is carefully integrated and carried out according to a plan to fit the employee for the job at hand and increase his value to himself as well as the company.

The pre-employment training is carried out in cooperation with nearby city and government sponsored vocational schools, with courses planned specifically to train applicants in specific skills.

Public School Unit—Under the pre-employment set-up, a public school in Baltimore has been assigned to the company for its exclusive use in developing riveters, sheet metal workers, machine-laid operators and electrical and welding hands. Teachers and facilities are provided and paid by the United States Office of Education.

The training program is planned and administered in cooperation with the Martin education department. Plans now are being worked out to extend this city school pre-employment program until it includes most of the occupational doors through which newcomers enter Martin employ. This will reduce time formerly spent on training new workers.

Navy Raises Goal to 31,000 Planes

Knox reveals increase from 27,000 aircraft at press conference.

By MARY PAULINE PERRY

Navy's original goal of 27,000 aircraft has been increased to 31,000 planes, Secretary of Navy Frank Knox disclosed at a press conference in Washington recently.

Although Navy production in 1943 has been remarkable, 1944 is scheduled to be even larger. Present estimates are that, in comparison with the 1943 output figure, next year's increase in aircraft production will be \$1,429,000,000.

Fleet Strength Doubled—With completion of the aircraft carrier *Wasp*, the numerical strength of the Navy's combatant fleet was doubled in less than eleven months. The Navy felt that it was unduly appropriate that the new *Wasp* should be the vessel to bind the Navy's numerical strength up to a level double that of eleven months ago, in view of Secretary Knox's statement, earlier this year, that aircraft carriers were receiving special emphasis.

The Secretary said more than two score aircraft carriers of all types, including merchant vessel conversions, have been completed this year.

Combat Planes Triple—Secretary Knox said April 9 that "in 1943, Navy combat planes will more than triple in number."

This forecast, although not yet fulfilled, will be met by the end of the year with several hundred planes to spare, it is believed. New combat planes produced this year are well in excess of double the number on hand at the beginning of the year.

Navy also is reported to be receiving delivery on a number of Army type planes.

Manpower—While manpower remains the critical obstacle to increased production, Navy believes that, among its 14 most important aircraft company contractors, the airplanes weight produced per employee (direct and indirect) per month, has increased more than 50 percent in the last three quarters of this year.

Navy statistics show women workers make up 33.5 percent of the direct labor in these plants compared with approximately 27.5 percent early this year.

One of the 14 operating in January, 1943, reported at that time that only 3.9 percent of the employees were women workers.

Plywood Study

Canadian research subcommittee inquiring into possibilities of "plastic" components

Application of molded plywood to foundations of aircraft components, accessories and fittings is receiving special attention by a subcommittee on wooden aircraft in the National Research Council laboratories in Canada. Work is directed toward improvement of quality of wooden aircraft and components, aiding production by technical improvement of processes, making most effective use of available timber and improving quality of glass.

Industrial Advisers—The membership of the subcommittee includes representatives of the Royal Canadian Air Force, Department of Munitions and Supply, Forest Products Laboratory, Aircraft Industry and the National Research Laboratories.

Serving as a channel for information from related groups in the United States and elsewhere, the subcommittee gives advice to manufacturers on specification requirements.

It likewise surveys problems confronting the aircraft industry such as wood-construction technique, priorities and research and development.



the manufacture of various types of oil separators for use in the de-icing equipment of airplanes has long been an important activity at Mercury... complete tooling and experienced craftsmen give considerable advantage in quality, price and meeting schedules.

dependable deliveries

MERCURY know-how, developed over 25 years devoted exclusively to aircraft fabrication, makes this company a dependable source of supply of aircraft parts and accessories, assuring quality unwavering and deliveries on schedule.

aluminum fast and oil tanks a silencer, fins, rollers and similar accessories.

as The Cradle of Aviation.



TIMING DOUGLAS ASSEMBLY LINE:

Douglas Aircraft's plant at Oklahoma has been equipped with big "clocks" which tell when the assembly line will move next. A row of the Douglas C-47 Skytrains, adapted for war purposes from the DC-3 airliners, is ready to leave next morning. The line, of which this is only a small part, has developed only within the last year, as manufacturing operations began in November, 1942, when construction of the plant was barely under way.

G. E. Engineer Admits Gas Turbine Gains

Stanford Moss says turbojet gains are paving way for development

Discussion of the much-debated gas turbine has been stimulated by Dr. Sanford A. Moss, General Electric Co. consulting engineer, who says the gas turbine is an efficient prime mover is not yet here, but admits that operating results of turbo-superchargers on airplanes are paving the way to the higher temperatures needed for its development.

Dr. Moss, 71-year-old inventor of the turbo-supercharger, hastened to add that whether the gas turbine will be able to compete with other types of prime movers when it arrives is strictly a matter of specification.

Addresses ASME—He pointed out in an address before the American Society of Mechanical Engineers that the next progress in higher temperatures will be better efficiencies for steam turbines and Diesel engines, while the gas-turbine prime mover would seek to replace.

Dr. Moss explained that the aviation turbo-supercharger, a type of gas turbine in itself, originated as a by-product of gas-turbine prime mover development which it is now replacing.

Progress Reported—"It is true that the aviation turbo-supercharger has only short-time operation at extreme conditions and does not have to meet the conditions of continuous operation as a power plant," he said. "Nevertheless, many problems have been solved, due to the anxiety of World War II, which advance the prospects of a gas turbine as a prime mover."

He quoted reports of operations of turbo-superchargers in war which show they are subjected to conditions far exceeding their test rating and pointed out that the nature of these conditions bears a relationship to the long-time operation at sea level to which a gas-turbine prime mover would be subjected.

Examples—As an example, he described one of the trucks used by American pilots of turbo-supercharged planes to get terrific momentary bursts of speed in air fighting. Turbo-superchargers are being used for pressure raising to give absolute pressure above sea level value, when flying at altitude.

This means, Dr. Moss explained, that absolute pressure in the engine intake manifold appreciably above sea-level are easily possible at alti-

tudes attained. Such pressures at boost are used for takeoff or for regular operations under special circumstances. Pilots, of course, have rules and technical orders which give values for the limit of intake manifold pressure safe for the engine and turbo-supercharger.

Buttle Turbine—"Thus, when a pilot with a turbo-supercharger is in battle, he has means of greatly increasing his plane speeds at most altitudes by increased boost," said Dr. Moss. "So when an enemy plane is on his tail, does the pilot take to his technical orders, look at his instruments, and figure out what he ought to do?" He does not. He subjects the turbo-supercharger to pressures far beyond its test rating."

Bell Abandons Plan For 10-Hour Shifts

Hardship for women employees and resultant absenteeism among the masses given

Following several weeks of intensive study, Bell Aircraft has decided that the two ten-hour-shift plan, proposed as a means of increasing production and conserving manpower, seems unfeasible for the



NEW CRANE

That new crane recently was demonstrated for the Marine Corps at the air station at Quantico, Va., by its manufacturer, Aviation Equipment Co. Suitable for removing engine from planes, its capacity is 6,660 pounds. Height is 25 feet

corporation's Niagara Frontier division and will not be put into effect.

Ray P. Whitman, first vice-president and manager of the division and the study began when the War Production Board requested adoption of two ten-hour shifts a day and suggested that immediate steps be taken to effect the change to the maximum practicable effect.

Plan Abandoned—Whitman indicated it was clear such changes should not be made without due consideration of local conditions, and it was on the basis of these local conditions, in the Buffalo and Niagara Falls area, that the company decided to abandon consideration of the proposal at this time.

Studied by Other Firms—"The same proposal is under study by other aircraft companies and, in view of this, the major reason for Bell's decision are given.

1 Women make constitute approximately 55 percent of the direct labor force in the division, and many are married and have family responsibilities. A ten-hour day would possibly subject them to hardship that could hamper their (Bell's) war-effort efficiency.

2 An increase in absenteeism, especially among women, might follow such a change.

3 A ten-hour day would mean that in some cases an employee would have to be away from home for a very considerable length of time since many workers come from relatively remote sections.

4 Many employees oppose a ten-hour day. This is one of the factors entered into our consideration of the testing of employees who do the work must be given weight.

5 A ten-hour day would mean a considerable loss in machine and equipment. This would mean a substantial decrease in utilization schedules and a loss in output of important detail parts.

6 A ten-hour day would require a complete reorganization of product transportation arrangements in and from the plants. One shift, for example, would have to end at an early morning hour when buses would not be available.

Whitman said "our study of the ten-hour day has been carried on over the past several weeks, at the request of the government to determine whether or not its adoption would increase our production of airplanes."

The factors cited indicate to what the change, if made, might not accomplish the desired result and that increased productivity already is being accomplished by other methods.

PERSONNEL

Harry F. Kapes, hydraulics engineer in the design engineering department of Glenn L. Martin, called it was a pleasure to be named chairman of the Society of Automotive Engineers' Committee on Hydraulics. He had served on this committee for a year.

Kapes also is a member of the National Association of Hydraulics, which works in conjunction with the Aeronautical Chamber of Commerce. Kapes joined Martin shortly after his graduation from George Washington in 1940, and holds the "Order of the Purple Martin," as a result of his contribution to the hydraulic system used in the Martin B-26 bomber.

Harold I. Bessie, chemical engineer, has been appointed sales manager for new products of Naugatuck Chemical division, U. S. Rubber Co. He has been with Commercial Investment Trust, The White Associated Oil Co. in product development engineer, and has been engaged in consulting engineering and development in various derivatives and compounds in his new capacity. Bessie, with knowledge of new synthetic rubbers and synthetic plastics and any new developments in chemical fields being employed by the company.

Dr. Richard Rossman, former director of the Aeronautical division of Montgomery Ward's Register Co., has been elected to the board of Lawrence Engineering & Research Corp., and appointed consulting vice-president and general manager. His executive assistant will be Alfred Marshall, formerly with the aviation division of Rubber Development Corp.

Hugh Branson became head of the tooling division of Kellogg Aircraft Corp., when that division was made a separate department recently. In the aircraft industry for 23 years, Branson came to Kellogg last May from Republic Aircraft Corp., where he had been chief tool designer. He was formerly with Chance Vought Corp.

Charles W. Penell, vice-president of manufacturing of Consolidated Vultee Aircraft Corp., was elected a director, recently. He was formerly vice-president in charge of production for Consolidated and superintendent at Vultee, where he installed the first mechanized assembly line for volume production of aircraft.

Directors of Chandler-Brown Corp. elected Ralph M. Hughes (left), secretary of the corporation, to succeed George H. Day, who continues as a director. Hughes will continue also as assistant treasurer. He joined the company in 1946 and was formerly with Bendis (left) and the Bendis Co. (right) in the automotive and radio divisions. Prior to that, he was with Stevens Magneto Co., the Bendis Aircraft Corp., various broker manufacturing, which later was absorbed by Bendis Aviation.



RECEIVES SAFETY AWARD: Lt. Gen. Barron K. Young (right), commanding general of Army Air Forces Training Command, The Wings for Victory Safety Award of the National Safety Council to Maj. Gen. Ralph P. Connor, commanding general of the AAF Western Flying Training Command. The award, conferred at a recent conference of primary flight school officers and AAF officers at Dallas, recognized the outstanding safety record in flight training for the first six months of 1943 of the Western Command.



Two Russian-born brothers, Michael (left) and Serge Glushko, have been named chief engineer and assistant engineering manager, respectively, of Sikorsky Aircraft division of United Aircraft Corp. Closely associated with Sikorsky throughout the development of the helicopter, they will make important engineering and technical contributions to the multi-engined flying boats, amphibians and three-engine fighters. After World War I, the Glushko brothers went to Finland where they designed and constructed gliders and sail planes. They came to the country in 1924 and have become citizens. Michael Glushko will be responsible for design and development of all helicopter projects and Serge will direct and administer the organization and functions of the experimental engineering department.

Frank M. Folsom, chief of the procurement branch, Office of Procurement and Material, Navy Department, has resigned to return to private industry as executive vice-president of Goldblatt Bros. Folsom's principal responsibility has been the clearance of all Navy contracts involving more than \$250,000. He appeared in the same capacity for the WPB. Previously he was with the National Division of Navy Contracts, and was president of Montgomery Ward & Co. He is succeeded by Laurel L. Nook, former president of American Woolen Co., who has been assistant chief of the procurement branch since December, 1942.

Rudolf E. Shaw has been named manager of the aircraft landside plant, Pontiac Motor division, General Motors Corp.

A new research laboratories division of Douglas Aircraft Co., Santa Monica, was headed by J. R. Gellman.

(photo) former engineering laboratory and a graduate of California Tech, Goldblatt will direct both physical and chemical research under recommendations of a five-man program board. Members comprising the board are: Dr. E. Gellman, Santa Monica factory manager; F. M. Schuman, testing director; E. R. Callahan, engineering executive; and William A. T. Schuman, plant engineer.

War News and Tax Selling Bring Decline in Aircraft Shares

Pence stocks also move lower, with some equities in "war babies" showing strong resistance toward price recession.

By ROGER WILCO

With decisive military events encouraging hopes of an early victory, the aircraft market has been shocked into a new low ground. Speculating strictly as a "war baby," the aircraft industry has prominently been featured in the list of new lows.

This condition has focused undue alarm as to the future of the aircraft manufacturers in the postwar era. Of course, the plane builders will suffer a severe shrinkage in business once the war is over. But the market has been anticipating this event for more than two years.

Pence Stocks Easier—That there is something more than a war factor to account for the weakness in aircraft shares is demonstrated by the fact that penny stocks are also devaluating in price. In fact, some of the "war babies," in recent months, have shown greater resistance towards price declines.

More important as an immediate market factor is tax selling. The aircrafts are an outstanding group where investors can realize gains, with profit, for a period of time. As another tax segment is due Dec. 31, it is likely a considerable number of sales of this nature will take place by that date. Transactions may, of course, be made through the forward and for sale period, but for speculative purposes the earlier date may be used as a landmark.

List at Year's Low—Virtually the entire aircraft list has been selling at the low point of the year. The low point of these declines is evident in Table 1. It can be seen that declines range from 17 to 54 percent. The low figure belongs to Republic which has promise of greater stability by virtue of its diversification in various products making materials is a number of major industries. To a lesser degree, the same condition prevails for Sperry.

The 34 percent devaluation for Consolidated-Vultee is echoed by the 31 percent drop in Aviation Corp. market values; the holding

company owning about 49 percent of the plane builder's common stock. **Tax Selling**—In years past, abnormal lows have been registered during periods of tax selling. Frequently, purchases made at such times have proved profitable—witness purchases of rail securities last year and the year before. This is not to suggest that aircraft shares will duplicate this pattern—but it is an interesting factor.

Further, present lows take most aircraft shares back to levels prevailing more than five years ago. For example, the last time Douglas sold at 145¢ per share was back in 1936. Lockheed, Martin and North American present lows were also depicted during 1939. Being back to such back to 1935. It is certainly a fair surmise that the plane builders, while not having the promise of war boom business, will nevertheless top near volume after the war than in the years before.

Uncertainty—To come up with the correct answer means the solution of many riddles which only time will solve. It is a mistake, however, to view aircraft shares as the sole target for market weakness as military developments move our way. There is the tax factor, for example, which can prove more important.

It must never be forgotten that when any major change occurs in world events—such as going from war to war or vice versa—great uncertainties are the rule and all market groups generally enter co-recessive phases.

1942 Market Range—Major Aircraft Companies
As of 11 November 51

Company	High	Low	% Decline
Aviation Corp.	256	146	43
Boeing Aircraft	110	60	45
Consolidated-Vultee	110	72	34
Douglas Aircraft	110	72	34
Lockheed	110	72	34
Martin	110	72	34
North American	110	72	34
Republic	110	72	34
Sperry	110	72	34
Consolidated	110	72	34

Aviation Men Curtail Trade in Own Stocks

September SEC report shows only slight activity by airline officials

Airline officials did little trading in their own securities during September. This was revealed by the report recently released by the Securities and Exchange Commission. The few transactions were virtually confined to airline officials.

Pan American Airways—Jaan Tripple continues on the selling side, disposing of 800 shares during September, leaving 25,612 in addition to 12,490 in trusts he created. For the four months ended in September, the record shows Tripple sold 2,700 shares of Pan American Airways' stock.

Rickey Sells 300 Shares—H. M. Rickey, of the same company, also sold during the month. He sold 300 shares after liquidating 399.8 N. Fairchild, a director, disposed of 200 shares, retaining 16,000.

On the buying side, Sigmond Jonas acquired, on a net basis, 300 shares of Colonial Airlines, bringing his holdings to 23,450.

Wells on Buying Side—Western Air's Thomas Wells bought 300 shares of his line to boost his holdings to 4,480. During September there was no further liquidation of shares by Cessler, Dwerikotte, and Guthrie, officers of Western who previously appeared as consistent sellers.

Financial Reports

Transcontinental & Western Air reports net earnings for first nine months of 1942 were 3.7 percent lower than for the 1942 period. After increase for Federal income taxes and contingencies, they amounted to \$1,387,008, or \$13.4 a share, compared with \$1,328,517, or \$13.1 a share, for the 1942 period.

Operating revenues reached \$14,181,684 in Oct. 1, this year to exceed last comparable figure of \$11,189,821 by 21.9 percent, and set an all-time high for any nine-month period in the company's history. Operating expenses, at \$11,117,304 were 23.3 percent higher than the \$9,173,687 in Oct. 1 last year.

Passenger revenue was up 21 percent, express revenue up 47, and mail revenue 18. Revenue passenger miles for the period increased 58.8 percent from 151,300,549 to 238,746,173, express ton miles 48.7 percent from 2,865,043 to 4,232,254, and mail ton miles \$6.6 percent from 2,349,485 to 3,026,214.

Federal Laws Urged To Clarify Intrastate Aviation Situation

Civil Aeronautics Board maintains hands-off policy, at the same time expressing traffic to see that interstate regulations are obeyed.

By MERLIN MICKEL

The intrastate aviation puzzle has some new pieces, and Civil Aeronautics Board officials are not sure they can be put together without Federal legislation. Meanwhile, the Civil Aeronautics Board is standing by its hands-off policy regarding intrastate aviation, waiting only to see that such operation does not become intolerable through the carriage of passengers in intrastate travel, or vice versa.

Several active or contemplated operations are under discussion in the states, among them Michigan to Virginia, Colorado and Alabama, but the CAB has taken no action and found none required against them. The air carrier division of the Civil Aeronautics Administration, partitioned off the postwar of widespread interstate activity, but since its jurisdiction is limited to general supervision, licenses for pilots and mechanics and planes and route development—of intrastate aviation, there appears to be little it can do to regulate the operation itself.

Court Test—The Board has gone to court in only one case of this nature, when it filed a complaint in September, 1940, against Colonial Airlines, Colorado, operating from New York to Niagara Falls without a CAB certificate, carried no mail on that route, but the CAB contended its jurisdiction had been the line was transporting passengers traveling intrastate. So the matter was taken to United States District Court. Federal judge stopped the operation of its own accord, however, and on Dec. 12, 1940, a consent decree was entered in the court records whereby the discontinuance was made permanent.

Not long ago the Board was notified by counsel for the Air Transport Corp. at Richmond that it has decided to open intrastate flights between Norfolk and Washington and between Norfolk and Roanoke via Richmond and Lynchburg, using two two-passenger Cessna 31-20-

two and a 12-passenger Ford trimotor, under charter granted by the Virginia State Corporation Commission last July 8. Counsel explained that the line would not accept passengers or property for or from destinations outside Virginia, adding that "it is the intention to scrupulously observe its transportation to intrastate traffic."

The planned routes are not now served, it was said, by any direct air transportation service operating on scheduled flights. (Airlines serving Roanoke, Eastern service Richmond, and Pennsylvania-Central serves Norfolk.) Subsequently, however, the idea of going into Washington

and Norfolk was dropped. Both are defense areas.

Shuttle Flights—Now Air Transport Corp., which has applied to the Board for routes from Norfolk via Tennessee, Kentucky, Ohio, Pennsylvania, West Virginia and the District of Columbia, has started its intrastate flights with shuttle flights from Richmond to Roanoke via Lynchburg, on a schedule calling for one round trip a day.

One of the situations and the Board are being used—the company is aware of a pilot shortage—leaving Richmond at 8 a.m. and arriving at Roanoke at 11 with 15 minutes at Lynchburg. On the return trip, it leaves Roanoke at 4 p.m. and arrives at Richmond with the same time lapse. The line has had requests for reservations as far as California and New Mexico, but has been careful its officers act, to explain its intrastate limitations. It has not looked for passengers.

Colorado—Information from Colorado is that S. N. Bruin, while he has state permission to operate a route between Durango and Denver and Alamosa and Pueblo, has had difficulty getting equipment and is not operating. Marvin E. Jackson, J. Perry Jackson and Edward E. Drapela of Grand Junction also have asked a state certificate for scheduled flight between Grand Junction



TRAFFIC CONTROL TOWER ON WHEELS:

Drawing shows Civil Aeronautics Administration's new mobile air traffic control unit, now being tested in the Washington area. Built on a heavy truck and having facilities of the usual control tower, the portable version is said to be able to operate within an hour after its arrival.

and other points, but it has not been granted.

The Jacksons are pilots who have operated their own planes for several years. Drapela is manager of the Grand Junction municipal airport and supervisor of the War Training Service program in Grand Junction. He operates a flying school, while the Jacksons are proprietors of a bottling and distributing company.

Alabama—In Alabama, Waterman Airline and Aera Express have applied for state certificates, but the matter has been referred to the statutory council on the question of jurisdiction.

Michigan—In Michigan, meanwhile, Great Lakes Skyways, Inc., subsidiary of Great Lakes Greyhound, has filed articles of incorporation with the Michigan Corporation and Securities Commission, and asked some legal problems in its request for approval of two helicopter "bus" lines in Michigan.

The Michigan Advisory Committee on Aeronautics, a division of the State Planning Commission has met at the state capital at Lansing to tackle the problem of what state agency is to regulate future state-wide air transportation. The meeting

was boycotted by opposition to "too much federal regulation." A second meeting is to be held Dec. 8 in Detroit to iron out revision and recommendations of Michigan's aviation statutes, the clarification to deal with changes in acts governing airport development, air safety, and passenger and freight transportation.

Operations Held—Tip-Olbert, 25, student, chairman of the Michigan Public Service Commission, says Great Lakes Skyways definitely will not be able to operate until the state legislature, which meets in January, clarifies the state's authority to regulate air transportation. Gov. Harry F. Kelly has promised to submit whatever program the advisory committee may offer, in a special legislative session starting Jan. 1.

In the meantime, as a compromise move between the Michigan Board of Aeronautics and the Commission, the latter has recommended that the Board issue a certificate of authority to Great Lakes Skyways, and that consideration of the question of securities for the firm be placed within the Commission's jurisdiction. Expected Board approval within the next few days would in effect end any opposition which has prevented the Board or the Com-

mission from setting on the application for lack of statutory authority. The Commission, unfortunately, has decided that the federal government should not be encouraged to "take over" functions which State agencies may be recommended to regulate.

Helicopter Line Sought—Great Lakes Skyways wants to operate a Detroit suburban helicopter line, and a helicopter route between Detroit, Pontiac, Flint and Bay City. Another development which may have a bearing on an application in the fact that the Michigan attorney general has been asked to rule on a petition by Associated Truck Lines of Grand Rapids to the Commission for authority to operate an aerial truck line over two routes and possibly a third into the upper peninsula, an out-of-state flight between Detroit and Muskegon, serving Flint, Grand Rapids, Bay City and Saginaw, and between Detroit and Detroit Harbor, serving Jackson, Belle Creek and Kalamazoo. Helicopters and truck lines would feed main lines. Northern Michigan Airlines, which has filed a petition with the Commission, but action on neither is expected pending legislative clarification.

CAB records show that under safety regulations, 15 states require federal licenses for all aircraft and all pilots, eight others require federal or state licenses for all aircraft and pilots, one requires state licenses only, and one both federal and state. Nevada's requirement of a federal license applies to commercial aircraft and pilots only.

Regulations—North Dakota requires federal or state license in the commercial category only. Thirty-three states have air traffic regulations, seven being either statutory instructions or administrative policy of promulgating rules substantially the same as those of the federal government. Forty-seven—all but Rhode Island, also have safety regulations on airport development.

Thirty-three have provisions for zoning. When it comes to requirement of certificates of convenience and necessity, only nine are listed. Twenty-three states have aeronautics commissions, 14 are regulated by other commissions, and twelve have no commission. Wyoming has both aeronautics commission and another commission to its aviation regulatory body. Wyoming Public Service Commission also is against the Lee bill, having passed a resolution last October declaring the mandatory of the state to be the general authority of this commission to regulate interstate commerce, and

stating the opinion that "nothing should be done to deprive the various states of their powers over such interstate transportation."

Board Action—The Board's views on intrastate operation were set forth in a letter by George C. Neal, general counsel, to counsel for Air Transport Corp., when it was planning its operation.

"There is no requirement under the Civil Aeronautics Act," Neal wrote, "that an air carrier engaged in purely intrastate operations must apply for a certificate of public convenience and necessity unless it carries mail. However, the Board has taken the position in the past that the fact that the person or persons carrying mail actually be moving in commerce between the states is the important consideration in determining the status of the carrier, and not the fact that the part of the transportation performed is carried in between the states or within the boundaries of any single state. If some property or passengers are transported in interstate commerce, section 401 of the Act requires the carrier to have a certificate of public convenience and necessity."

"It is difficult to render an opinion as to whether a particular operation constitutes interstate air transportation as defined by the Act, inasmuch as such a determination can and should be made only after a detailed examination of the manner in which that operation actually is being or will be conducted."

Mexican Plane Needs Listed by AA Official

De Blinde specifies passenger-cargo craft carrying 65 persons and 1,000 pounds of freight.

By SCHOLER BANOS

Karl de Blinde, cargo traffic superintendent of American Airlines de Mexico, last week told Douglas Aircraft and American Airlines experts the type of airplane needed to handle Mexico's mounting air commerce, as he sees it after years of experience in airline operations in the Latin America.

"It should carry 1,000 pounds of cargo in addition to from six to eight passengers," says de Blinde. "It should be able to run a 3,500-foot runway, get in and out of fields at altitudes up to 12,000 feet, possess around 34,000 pounds gross weight; be a high-wing monoplane to clear natural obstructions besides man-



DESCRIBES MEXICO'S AIR NEEDS:

Karl de Blinde (left), told Douglas Aircraft sales experts that Mexico's increasing air commerce will require an airplane not now being built by American manufacturers. Here he describes the need to Net Paschall, Douglas domestic sales manager, and John A. Smith, western cargo traffic superintendent, American Airlines. De Blinde is cargo traffic superintendent of American Airlines de Mexico.

ways, possess a steep angle of climb for small field operations in and out of jungles, carry extra-wide belton runs for landing in swampy areas and on rocky runways, have exceptionally wide doors, preferably on the side and close to the ground, and have movable passenger-cargo partitions in the fuselage.

Utility Proposed—For evidence, de Blinde had Net Paschall, Douglas domestic sales manager, and John A. Smith, western cargo traffic superintendent, American Airlines. Speed and cost of such an air-

plane will be secondary to its all-around utility and ability to carry machinery and commodities for the development of rich mining and agricultural areas now isolated by lack of transportation other than burro back.

De Blinde began his aviation career in 1918 with Pan American Airways System.

After eleven years with Pan American, he joined KLM in South America and held the position of assistant manager when he transferred to American Airlines de Mexico a year ago.

Traffic Control

A suggestion that information on traffic control devices now restricted to military use be given to a trusted group of commercial air line officials by the War Department has come from Hugh L. Smith, American Airlines operations vice-president.

Smith feels, he said in Los Angeles, that the problem of traffic control may become a critical bottleneck in postwar air line expansion. He proposed his views at a luncheon headed off American Airlines pilots and co-pilots at which Smith, on his way to Mexico City, discussed privately American's plans for postwar operations here and abroad.



PCA STARTS BALTIMORE MAIL SERVICE:

Pennsylvania-Central Airlines has started its mail service over its line from Baltimore to Pittsburgh and Baltimore to Washington, where presently it was restricted to passengers and express. Pilot on the first mail flight was Bud Baker, shown here with Major McKelton of Baltimore. Master Pilot Marsh and Ray M. Martin, United States superintendent of mail operations.

Six Applicants File For Route Permits

PCA seeks to extend service to link U. S. and Canadian airports
By **BARRBARA FREDRICK**

Requests for new routes were filed last week by six applicants including two existing schedule operators, two airlines and two individuals.

Brant Airway's application for air service between the co-termini Laeada, Texas, and Nuevo Laredo, Mexico, via Monterrey to Mexico, D.F., came on the heels of a CAB order temporarily permitting Brant to serve Nuevo Laredo as a seasonal point on Route 50. In its order, the Board found connecting service between Brant and Compañia Mexicana de Aviación would be substantially improved by permitting Brant to go to Nuevo Laredo. In the past, passengers going to various points in Mexico were caused considerable delay by ground transportation from Laredo to Nuevo Laredo.

Washington—Ottawa Service—
Panagra-Central Airlines, also

asked CAB for permission to open the first direct air service between the capital of the United States and Canada by extending PCA's Route 44 from Buffalo to Ottawa, Canada, via Rochester, N. Y. Service is now provided from Washington to Buffalo by way of Baltimore, Harrisburg and Philadelphia.

Murray & Hutton's Flying Service at Colorado State College Airport, Fort Collins, Colo., applied for two wing-like routes from Denver. One would go to Casper, Wyo., out through various points and back via a different route. The other route would be Alliance, Neb. Company also asked to give its service during the tourist season between Longmont, and Fort Collins, Colo., via Stone Park. Two-engine craft capable of carrying a pay load up to 2,500 pounds would be used. Company operates what it described as the second largest training school of its type under CAA-WTS.

Interceptor Line—Walter S. Fullwood, manager of McAllen, Tex. Municipal Airport and operator of an approved CPT Primary School, with Clyde H. Bequerant, resident pilot, asked permission to intercept passengers and mail from mainline-

ers at Corpus Christi and transport them to McAllen. They propose to use four-place Beechcraft, operating one round trip daily. When feasible, they would add property and service along this route.

Applications to employ amphibious helicopters and serve points on navigable rivers were filed by Road Quarter Chaffert, USMR, "normally routing at Pittsburgh." Some places Chaffert proposes to serve are the "Point" is metropolitan Pittsburgh at the confluence of the Allegheny and Monongahela Rivers; points on the Ohio River near Ambridge, Pa.; East Liverpool, Ohio; Wheeling, W. Va., on the Mazon River, near Youngstown, and on the Mazon-Michigan near McKeesport, Pa. Scheduled service would be provided for passengers, mail and commodities from Allegheny County Airport to the river points and, in some cases, to other airports.

Helicopter Route—London Lawrence, Cleveland, Central, Wash., filed two applications with CAB, bringing to four the number he now has pending. By extending to San Francisco a previously applied-for route which terminates at Crescent City, Cal., an "all coast route" would be available for passengers, mail and property, from the Puget Sound region to the San Francisco Bay region, if those applications are granted. Again proposing to use helicopters, Lawrence also asked for a circular route extending to and from Portland, Ore., via 16 intermediate points in Oregon. He also asked to provide a 100,000-lb. passenger and cargo service. In scheduled and unscheduled operations, he would carry mail, secure film, advertising and other necessary supplies, magazines and metropolitan newspapers from Portland and Seattle to any point in the U. S. within 300 miles.

Army Staffs 23 CAA Flight Control Units

More give military weight to advisors on war plans

The Department has placed its own staff in each of the 23 Civil Aeronautics Administration flight control centers, thereby giving military weight to advisors to Army pilot Army "joint" advisory service is coordinated with CAA's advisory traffic control service, which still operates as flight advice to heavy and private pilots. (The airlines have their own flight control systems.)



SWEDES SEEK PLANES

P. A. Morin (right), potential president of Swedish Air Lines, Stockholm, says "we have reasons to believe we will get new equipment." He is shown with K. N. Larsson, CAA chief engineer Morin's "stop-over" centered at Douglas Aircraft Co.'s home office in Santa Monica.

The Army service is provided by the Flight Control Division of the Office of Flying Safety, Headquarters Army Air Force, with Col George C. Price commanding. Flight control officers at various stations receive flight plans and all point-to-point missions in their areas, and each flight is plotted on a magnetic map along the prescribed route according to scheduled speed.

Aid in Locating Planes—Positions are checked against reports from stations in radio contact with the pilot, and warnings of hazards are communicated through these stations. Army expects the system to be a help in "locating and rescue of forcefully grounded planes."

Opening of the system was suggested to CAA about a year ago, and was said to have the personal backing of Gen. H. H. Arnold, commanding general of the Army Air Force. At that time the Army did not have ground-to-air communications, nor point-to-point communication on the ground.

Reserves Called—CAA's Air Traffic Control division contained eight or ten men in the reserves, and those

were called into the Army as a nucleus for the new system. The CAA already had established flight control training centers at its seven regional offices, and was training several hundred Army and Navy personnel. With this beginning, the number of trainees grew until staffs now have been placed in each of the centers. Most recently activated were the five at Minneapolis, Chicago, Detroit, Cleveland and Pittsburgh.

Army flight control advisors are issued in each case through CAA's senior national advisor on duty, and the pilot makes his own final decision after he receives notice of a developing hazard. Compliance with the suggestions has been so high, CAA officials say, that it has been deemed unnecessary to issue the advice in order form.

Suggestion System

Over 700 ideas adopted by pilots, with \$12,000 award, UAL officials reveal

Suggestion systems have an important value as aid to management-employee relations in addition to their place in the war effort, says F. A. Deet, newly re-elected executive secretary of the National Association of Suggestion Systems.

Deet, who is general chairman of United Air Lines' employees' suggestion campaign, told the Office Management Association of Chicago recently that the company has handled 4,000 employee suggestions. Over 700 of these have been adopted, with awards of more than \$12,000 in war bonds and savings. Thirty-five have won production awards.

Personal Relations Improved—Personal stability of the suggestion system, "is improved personal relations," adding that "while the system has shown its value in war production, it will remain as a valuable fundamental and permanent asset when the war is ended."

The last few years, Deet asserted, have seen the suggestion method "coming to the front. It has been developed in thousands and thousands of plants and the process of improving management-labor relations has been in the industrial rank. The investment has proved a dividend-paying one."

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ALL-CARGO PLANE INTERIOR FITTING:

This interior picture of one of United Air Lines' cargo ships, empty, shows at right the adjustable sets of narrow webbing used to lash packages of various sizes into the bins as they will be shaken up or break loose. They are United's own development. The plane is equipped with reinforced plywood floor, plywood siding, and heavy steel wire screens over windows. Most the half round steel slats fixed to the floor to provide for sliding packages along the aisle, which United engineers regard as superior to some respects to roller conveyors.



Assaying the Helicopter

GEORGE LOENING's carefully prepared, concise summary of the technical status of the helicopter today and the problems which will prevent its wide public use for at least five or ten years is a valuable service to aviation. Such an authoritative statement has been needed.

In an address of less than ten typed pages, delivered in Brooklyn December 3, the WBB and NACA officials sketched an outline which should be distributed widely.

Paying tribute to the "extraordinarily successful pioneering of Igor Sikorsky" and the important developments underway in this country, Mr. Loening makes it clear that the helicopter's long-range future is "far too great" to risk more disappointment and disillusionment when utmost confidence

will be required to pass through the development period.

Yet continued dissemination of rosy prophecies about the possibilities of day after tomorrow can do just that.

"Time and again in aviation's history an over-optimistic public appraisal of a new development gets far ahead of the facts—so much so as to cause a disappointment at finding a lesser future disclosing itself," he says. "No instance comes more forcibly under this influence than the present and future development of the helicopter."

There are perplexing difficulties, but Mr. Loening is confident that the nation's engineers will work them out.

Looking Ahead for Civil Flying

CIVIL AIR PATROL's COMMANDEER has sent a letter to personnel disclosing that "the outlook for CAP is more favorable than at any time since we began."

With recent addition of 236 Army-owned light planes, activities by the 63 wings in connection with recruiting for the Air Forces will be stepped up.

Marked expansion of flying operations has been approved to release military equipment and Army flight crews for combat duty.

Military regulations have been eased in the Pacific coast area to permit more CAP services. New bases will be activated shortly in other areas. Col. Earle Johnson reveals: "Formation of CAP units at aviation plants throughout the country has been underway for weeks."

CAP is one of the two great wartime operations utilizing the facilities of civilian aviation. It is significant for the future of private flying that the Army, of which CAP is an auxiliary, is authorizing such expansion.

CAP's outlook is in sharp contrast to that of the other civil flying war aide, the war training service's national system of flight schools. WTS at this moment has no firm commitment that its life will be extended beyond June 30. Some of its contracts expire in early spring. Such assurance is still de-

pendent on passage of the omnibus Lea Bill or the passage of a special WTS measure.

It is to be hoped that the Army, Navy, and Congress will awaken to the present and future value of WTS to them and to the nation.

WTS, besides preparing thousands of young men for military service, has set up a network of flight training facilities which will be of permanent military value after the war.

Even though the armed services' own schools may be able to accommodate all future replacements, WTS should not be permitted to let up its pace. "If we are to hold the place which we will have won, we must make sure that a large number of young people will be taught to fly each year," R. McLean Stewart, executive director of training of WTS said last week. "We need such an influx of young pilots if we are to retain our command of the air. We need them for civil aviation. We cannot rely on those who will then be the veterans of this war. In a year or two after the peace they will have settled down to civilian pursuits. Nor can we leave aviation training to the unaided resources of private individuals."

The WTS system should be maintained as a going concern. It should not be allowed to start disintegrating for lack of assignments.

ROBERT H. WOOL

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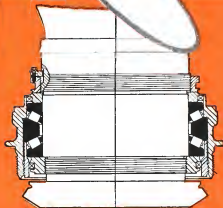


Each blade puts a centrifugal load of more than 50 tons on its bearing, but is free to swivel freely when the pitch is altered.

That, comparatively, is the easiest part of the bearing problem. Various tilting forces must be taken into consideration; those due to inertia, those due to heavy propelling thrust, and those due to gyroscopic effects.

All these forces, applied at a long leverage, have to be carried by a few rollers on opposite sides of a base of only $6\frac{3}{4}$ " span.

This section shows the specially developed Timken Tapered Roller Bearing that carries these complex loads with freedom of action, but without a hint of backlash. In the post-war era of air transport make sure you get the advantages of Timken Bearings not only on propeller feathering mechanisms but in many other points of application which will be revealed in future issues of this magazine. The Timken Roller Bearing Company, Canton, Ohio.



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Wherever the Timken Tapered Roller Bearing is used it results in higher load capacity and increased stability against every combination of stress. This illustration shows Timken Bearings as mounted in the hub of a controllable pitch propeller blade.

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